MT 2000

SYNTHESIZED FM PORTABLE RADIO

Typical Performance Specifications (all specifications are per EIA 316B unless otherwise noted)

General	Model Number	Channels	Bandsplit	RF Pwr Output	Display / Keypad
VHF Models	H01KDD9AA4_N	48	136 - 174 MHz	1 to 5 Watts	Top 6 Character / None
	H01KDH9AA7_N	160	136 - 174 MHz	1 to 5 Watts	Front 14 Character / 15 Button
UHF Models	H01RDD9AA4_N	48	403 - 470 MHz	1 to 4 Watts	Top 6 Character / None
	H01RDH9AA7_N	160	403 - 470 MHz	1 to 4 Watts	Front 14 Character / 15 Button
	H01SDD9AA4_N	48	450 - 520 MHz	1 to 4 Watts	Top 6 Character / None
	H01SDH9AA7_N	160	450 - 520 MHz	1 to 4 Watts	Front 14 Character / 15 Button

Power Supply	Provided through one rechargeable nickel cadmium battery.
Sealing	Withstands rain testing per Mil. Std. 810 C/D/E
Shock and Vibration	Protection provided via impact resistant housing exceeding EIA RS-316B and Mil. Std. 810 C/D/E
Dust and Humidity	Protection provided via weather resistant housing exceeding EIA RS-316B and Mil. Std. 810 C/D/E

Radio Dimensions		Radio Weight	A4	A7
Radio Only:	6.30" (H) x 2.34" (W) x 1.49" (D)	**Radio Only:**	10.3 oz.	10.9 oz.
With Medium Capacity Battery:	6.30" (H) x 2.34" (W) x 1.49" (D)	**With Medium Capacity Battery:**	17.0 oz.	17.6 oz.
With High Capacity Battery:	6.30" (H) x 2.34" (W) x 1.49" (D)	**With High Capacity Battery:**	18.4 oz.	19.0 oz.
With Ultra High Capacity Battery:	6.30" (H) x 2.34" (W) x 1.54" (D)	**With Ultra High Capacity Battery:**	19.5 oz.	20.1 oz.

Dimensions Note: All depth and width dimensions reflect measurements taken at the widest points on the radio unit. They do not reflect every width and depth point on the radio.

Battery Life @ 5/5/90	VHF @ 5W	VHF @ 1W	UHF @ 4W	UHF @ 1W
Medium Capacity Battery:	4.0 Hours	5.0 Hours	4.0 Hours	5.0 Hours
High Capacity Battery:	8.0 Hours	11.0 Hours	8.0 Hours	11.0 Hours
Ultra High Capacity Battery:	9.0 Hours	12.0 Hours	9.0 Hours	12.0 Hours

Transmitter

	VHF	UHF
Channel Spacing:	12.5 / 25 / 30 kHz	12.5 / 25 kHz
Frequency Separation: (MHz)	Full Bandsplit 136 - 174	403 - 470 & 450 - 520
FM Hum & Noise @ 12.5 kHz: @ 25 or 30 kHz: (Companion Receiver Method)	- 40 dB - 45 dB	- 40 dB - 45 dB
Audio Distortion:	3%	3%
Spurious & Harmonics:	- 66 dBW	- 66 dBW
Frequency Stability @ 12.5 kHz: @ 25 or 30 kHz: (- 30 to + 60° C; 25° C ref.)	+/- .0005% +/- .0005%	+/- .0003% +/- .0005%
FCC Designation:	AZ489FT3768	AZ489FT4780
FCC Designation:	16K0F3E 20K0F2D	16K0F3E 20K0F2D
Audio Response: (from a 6 dB / octave pre-emphasis 300 to 3000 Hz)	+ 1, - 3 dB	+ 1, - 3 dB

Receiver

	VHF	UHF
Channel Spacing:	12.5 / 25 / 30 kHz	12.5 / 25 kHz
Frequency Separation: (MHz)	Full Bandsplit 136 - 174	403 - 470 & 450 - 520
Modulation Acceptance @ 12.5 kHz: @ 25 or 30 kHz:	+/- 3.75 kHz +/- 7.5 kHz	+/- 3.75 kHz +/- 7.5 kHz
Audio Distortion:	3%	3%
Intermodulation @ 12.5 kHz: @ 25 or 30 kHz:	- 65 dB - 75 dB	- 63 dB - 73 dB
Sensitivity: 20 dB Quieting: 12 dB SINAD:	.40 μV .28 μV	.40 μV .28 μV
Adjacent Channel Selectivity (EIA Sinad) @ 12.5 kHz: @ 25 or 30 kHz:	- 65 dB - 75 dB	- 63 dB - 73 dB
Spurious Response Rejection: ½ I.F.:	- 75 dB - 75 dB	- 73 dB - 68 dB
Image Rejection:	- 74 dB	- 73 dB
Rated Audio Output:	500 mW	500 mW
Frequency Stability: @ 12.5 kHz: @ 25 or 30 kHz: (- 30 to + 60° C; 25° C ref.)	+/- .0005% +/- .0005%	+/- .0003% +/- .0005%

	U.S. Military Spec 810C		U.S. Military Spec 810D		U.S. Military Spec 810E	
Standard	**Method**	**Procedure**	**Method**	**Procedure**	**Method**	**Procedure**
Low Pressure	500.1	I	500.2	II	500.3	II
High Temperature	501.1	I	501.2	I (Cat. A1), II	501.3	I (Cat. A1), II
Low Temperature	502.1	I	502.2	I (Cat.C1), II	502.3	I (Cat. C1), II
Temperature Shock	503.1	I	503.2	I (Cat. A1, C1)	503.3	I (Cat. A1, C1)
Solar Radiation	505.1	I	505.2	I	505.3	I
Rain	506.1	I, II	506.2	I, II	506.3	I, II
Humidity	507.1	II	507.2	II, III	507.3	II, III
Salt Fog	509.1	I	509.2	I	509.3	I
Dust	510.1	I	510.2	I	510.3	I
Vibration	514.2	VII, VIII, X	514.3	I (Cat. 8)	514.4	I (Cat. 8)
Shock	516.2	I, II, V	516.3	I, IV	516.4	I, IV

Support Services
Wherever Motorola sells, our product is backed by service. In the US, we have 900 authorized or company owned centers. In addition, our products are serviced throughout the world by a wide network of company or authorized independent distributor service organizations.

Winner 1988 Malcolm Baldrige National Quality Award

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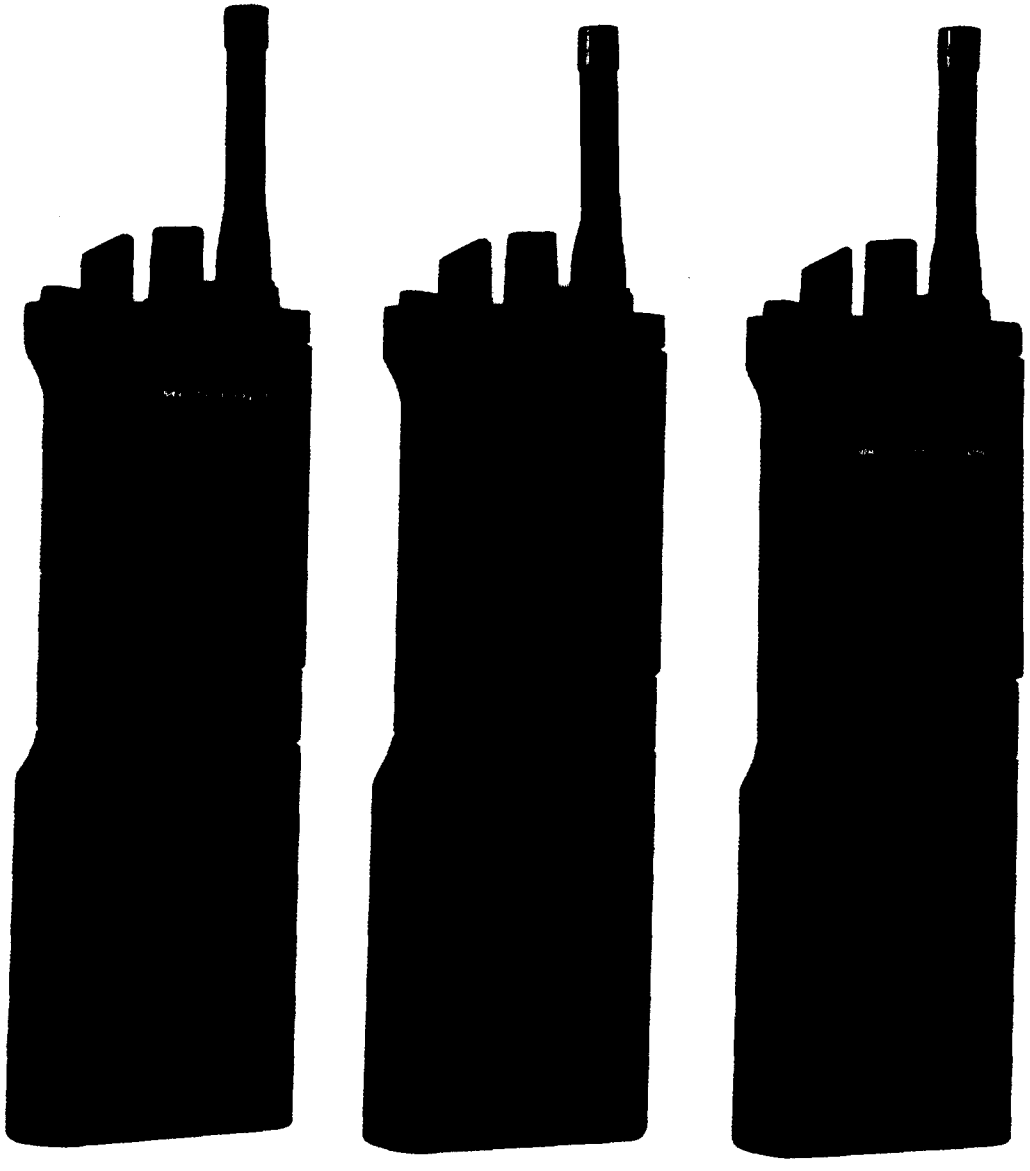
Produced by Marketing Services

MOTOROLA

SABER I, II and III Conventional Portable Radios

Clear and SECURENET Capable Models



The SABER family of radios offers you sophisticated features and flexibility in two-way portable radios. The microcomputer and custom designed integrated chip set give you a small, lightweight, high performing, totally field programmable portable with superior specs. SABER radios are a synergistic blending of advanced operating features with efficient radio use. The variety of models and options available allows you to select the communications tool that meets your needs best. The SABER family upholds the quality, reliability and high performance standards you have come to expect from Motorola.

Here is the SABER family at a glance. Explanations of features and advantages appear on the following pages.

You can choose SABER I , II or III in either clear or SECURENET Capable models. With a SECURENET Capable SABER you get increased system flexibility!

Standard Features for All SABER Models

Synthesized - Multiple Channel Capability - Synthesizer technology provides the capability to select the number of channels needed up to the model's full channel capacity in all VHF/High Band or UHF models.

This multi-channel capability is adjustable in all models to satisfy system requirements that range from basic to complex.

Enhanced Audio - A loudspeaker working in conjunction with our unique Audio Filter IC's and microcomputer makes SABER one of the loudest and most intelligible portable radios Motorola has developed.

SABER's microcomputer-aided acoustic system reduces distortion, which means improved voice intelligibility, at high volumes.

Battery Saver - The advanced microcomputer is able to temporarily shut-off non-required radio components during periods of non-activity. The radio continues to monitor and operate at a level that reduces battery current drain.

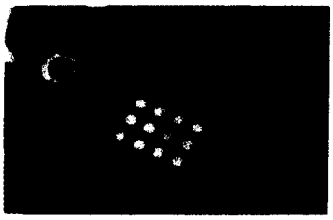
This inherent capability of the SABER radio provides the operator with additional battery life every time it is utilized.

Mode* Select Operation - Mode Select operation is a major feature of the SABER radios. A mode is the list of characteristics or functions performed on a channel. With Mode Select options popular auxiliary functions can be slaved to the channel (mode) selector switch. Mode Select enables you to simultaneously select:

- Transmit and receive frequencies
- PRIVATE-LINE, DIGITAL PRIVATE-LINE or carrier squelch operation on any of the modes in the radio
- Time-out timer
- Power Level
- Other radio operational parameters such as ID codes,

Field Programmable - All the radio's functions such as frequencies, squelch codes, power levels and other operational data can be modified in the field by reprogramming the radio's EEPROM. Changes are made without opening or disassembling the radio.

The SABER radio can easily respond to your changing system needs. Individual radios or channels can be "personalized" according to the operator's requirements, for optimal efficiency. Should you need to change or expand the system, all portable radio channel reassignments can now be easily reprogrammed in the field.



Universal Connector - This multi-function flush mount gold plated connector accepts various audio accessories, an attachment to a reprogramming device, as well as tune and test cables.

All reprogramming, tuning and testing can be performed by a simple attachment procedure, without opening the radio.

Meets Stringent Environmental Specifications - SABER radios are ALT tested; the unique Motorola Accelerated Life Test which simulates five years of field stress in two months. SABER also meets a comprehensive variety of environmental standards contained in U.S. Military Standard 810 C, D and E. Created by the Department of Defense, these testing standards are among the most rigorous for radio equipment today.

The SABER family of radios meets the military standard for shock, vibration, temperature, low pressure, dust, humidity, rain, salt fog, leakage and solar radiation. We have designed out known failure modes, designed in ruggedness, and verified the process with the ALT, MIL-STD 810 C, D and E, and EIA RS-316 B

Options for All SABER Models

STAT-ALERT Unit Identification with or without Emergency - Compatible with Motorola communications systems based on the digital format provided by Stat-Alert signalling, each SABER radio can be programmed to send a unique identification code at the beginning of each transmission, at the end or both. This ID may be combined with an emergency status that is activated when the operator depresses the alarm switch on top of the radio. These options are available in the MDC-600 and the higher speed MDC-1200 signaling formats.

The dispatcher, equipped with the appropriate decoder, is automatically alerted to an emergency by an audible tone and visual readout for positive identification of a specific radio. Individual Unit ID minimizes air time required for normal communications. The emergency function provides added user security and safety.

QUIK-CALL II Selective Signaling - This decoder option enables the SABER radio to be selectively called by a two-tone paging encoder system. An individual or group can be alerted and accessed in this way.

The user will receive only those calls which pertain to that particular unit. Since constant channel monitoring is not required, user fatigue is reduced. With two-way communication and selective call capability, the user can respond instantly to any call.

SINGLE TONE Signaling - This encoder option will send out a single tone frequency upon activating the Push-To-Talk or pressing a Repeater Access button.

The user can transmit predefined tone signaling sequences such as repeater access control.

SABER I Portable Radio

- **12 Synthesized Channels**
- **Submersible Models**
- **Expanded Models**
  - **24 Channel Capacity**
- **Optional Signaling includes**
  - **QUIK-CALL II**
  - **SINGLE TONE**
- **Ruggedized Option**

The SABER I radio combines technological excellence with user friendly rotary controls. Its small size and enhanced performance are combined with the quality and reliability you have come to expect from Motorola - the leader in two-way radio communications.

Submersible Models - Certain SABER I Series portable radio models are fully submersible in up to three feet of fresh water for two hours. These models pass MIL-STD 810 C, D and E, Method 512.2, Procedure I, the total immersion standard.

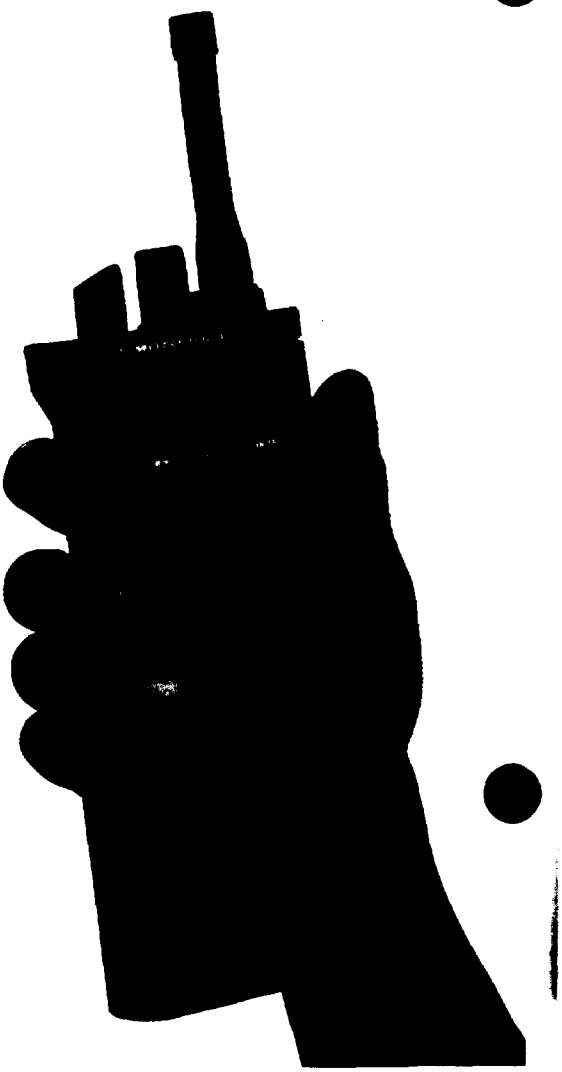
Designed to assure added protection in all weather applications such as rain and snow, submersibility provides greater environmental performance when you need it.

Expanded Models - Certain SABER I Series portable radio models are capable of either two zone operation (24 channels) or talkaround. These features are accessible via a top-mounted rotary knob.

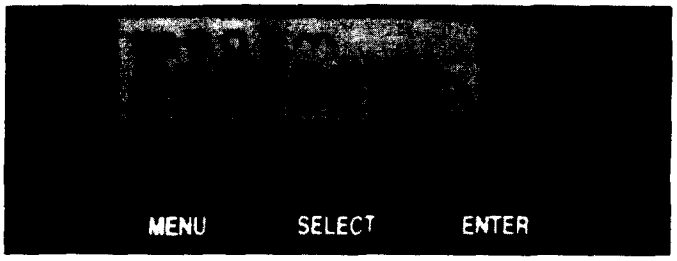
The expanded models provide larger channel capacity with SABER I capability.

SABER II Portable Radio

- **72 Synthesized Channels**
- **3 Button Keypad**
  - **MENU**
  - **SELECT**
  - **ENTER**
- **Display and Keypad Features**
  - **Battery Status Indication**
  - **Liquid Crystal Display**
  - **Alpha Naming**
- **Menu Operation with the Following Options**
  - **Zone and Channel Operation**
  - **Channel Operation**
  - **Autodial**
  - **Keypad Lock**
  - **Mute Operation**
  - **Operator Selectable Coded Squelch**
  - **SABERSCAN**



The SABER II radio puts maximum radio flexibility at your fingertips with the MENU, SELECT, and ENTER keys. In conjunction with the selector switch on top of the radio, you can access up to 72 channels and 6 zones. Enhanced performance and ease of operation team up with small size in the SABER II.



3 Button Keypad. The SABER II keypad consists of three control keys: MENU, SELECT and ENTER.

Enhanced user flexibility at the mere push of a button. The SABER II was designed to be easy to operate, and it is!

Battery Status Indication - The two state battery symbol illuminates to tell you when to charge or exchange the battery.

You no longer need to guess about the state of charge of your battery. Your SABER II or III tells you when it needs to be recharged, eliminating surprises in the field.

Liquid Crystal Display (LCD) - The eight character display is front-mounted and can be illuminated. Helpful symbols are present to indicate: Battery status, SECURENET encrypted/clear voice transmission (on SECURENET models), carrier/coded squelch, simplex vs. repeater channel, and a user friendly prompt.

Provides continuous visual confirmation of the radio's operating mode. The LIGHT capability allows better visibility in dim lighted areas and at night.

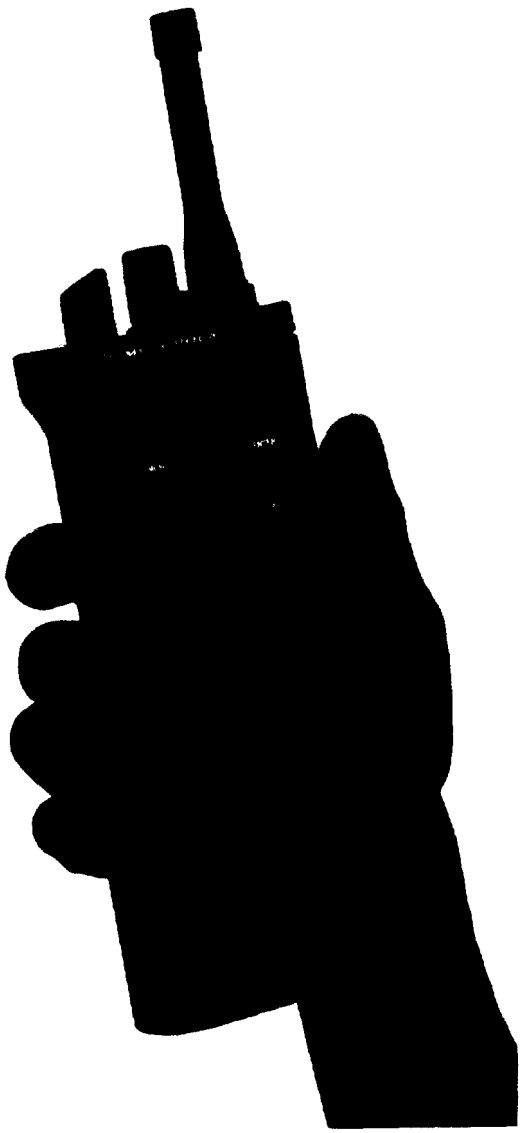
Alpha Naming - Many of the menus are capable of being programmed with alphanumeric designations in SABER II and III. Not only can zones and channels have alpha names but your Autodial telephone directory and Coded Squelch choices can also be identified for who or what they are.

Flexibility remains the key with SABER II and III. You get advanced radio operation without the complications. Alpha naming turns your radio into more than just another communications tool.

SABER III Portable Radio

- **120 Synthesized Channels**
- **3x5 Button Keypad**
- **Display and Keypad Features***
  - **Battery Status Indication**
  - **Liquid Crystal Display**
  - **Alpha Naming**
- **Menu Operation with the Following Options****
  - **Zone and Channel Operation**
  - **Channel Operation**
  - **Autodial**
  - **Keypad Lock**
  - **Mute Operation**
  - **Operator Selectable Coded Squelch**
  - **SABERSCAN**
- **Additional Menu Options**
- **Manual Telephone Interconnect**
- **Keypad Security Lock**
- **Password**
- **Radio Lock Operation**
- **Operator Selectable SABERSCAN List Via Keypad**

* Explanation on page 5
** Explanation on page 7



The SABER III radio assures the maximum operating flexibility and systems capability a portable can provide. The SABER III features a 3 x 5 keypad and a selector switch to access 120 channels in addition to the high performance and light weight that distinguishes the SABER series.

3 x 5 Button Keypad - The SABER III keypad consists of three control keys, MENU, SELECT and ENTER and a 3 x 4 button array as found on a standard telephone. The numeric nomenclature is distinctly visible.

Every operation from a zone change to manual telephone dialing is accomplished via these keys. For further reliable operations, the keypad is environmentally sealed to prevent the entrance of contaminants into the radio circuitry.

SABER II and III Menu Options

Zone and Channel Operation - The ZONE Menu, in conjunction with the channel selector switch, provides the means to select 72 channels on the SABER II and 120 channels on the SABER III. It serves a frequency management function by allowing you to segment channels into departments, precincts, specific fleet groups or whatever your particular system requires.

With multiple zones you have user convenience and systems control at your fingertips. You can use all 72 channels with 6 zones on the SABER II and 120 channels with 10 zones and the 12 position frequency selector switch on the SABER III.

Channel Operation - The CHANNEL Menu provides ability to preprogram the same multiple channel capability - up to 72 without zones, using 3 button keypad on the SABER II and up to 120 without zones using 3 x 5 button keypad on the SABER III.

This option was specifically developed for those users who prefer using pushbuttons, as opposed to the rotary switch, when selecting channels.

Manual Telephone Interconnect Menu (SABER III Only) - The PHONE Menu provides the ability to enter a Dual Tone Multi-Frequency (DTMF) telephone number via the keypad. Scratchpad memory allows you to store a new number while in the middle of a conversation.

To enhance your confidence, audible feedback assures you that the keys have been properly activated. The numeric\keypresses are reflected in the display as you enter them.

Menu Options to Protect Radio Operation (SABER III Only) - Safeguard the operation of your SABER III from unauthorized use with either KEYPAD SECURITY or RADIO LOCK, or both, and PASSWORD. KEYPAD SECURITY locks the keypad which will disable all other menus programmed in the radio. RADIO LOCK disables radio operation when radio is turned on without using the password. PASSWORD, standard with KEYPAD SECURITY or RADIO LOCK, or both, allows you to create and change the numeric password that unlocks the keypad and/or radio.

Your SABER III can have a flexible, advanced level of protection. It will work, the way you've programmed it, for you and no one else.

The Ruggedized Option for Saber I and II: I-R and II-R

Saltwater Resistant - The SABER I-R and II-R options meet or exceed all of the stringent standards for durability as stated in the U. S. Military Standard 810 C, D, and E. SABER I-R and II-R go one step further. They are able to endure immersion in saltwater for up to four hours at a depth of six feet.

Standard Features for All SECURENET Capable Models

The SECURENET capable SABER radios provide you with the ability to add SECURENET encryption to your radio system. SECURENET radios protect messages by a special encrypting or coding method, therefore sensitive information can be transmitted with confidence. The capability of clear or coded voice transmission in the same radio allows for easy system integration. SECURENET capable radios allow you to add voice security to your system as it becomes a requirement by choosing from the various encryptions available from Motorola. Encryption options include DES and DES-XL for U.S. use only; DVP and DVP-XL for global use; and, DVI-XL for international use only.

SECURENET radios can also be ruggedized.

- **DES Encryption** - DES encryption was developed for the US Federal Government. It contains 7.2×10^{16} encryption keys.
- **DES-XL Encryption** - DES-XL encryption features coded range equivalent to clear. DES-XL encryption was also developed for the US Federal Government. It contains 7.2×10^{16} encryption keys.
- **DVP Encryption** - DVP encryption features a Motorola proprietary algorithm. It contains 2.36×10^{21} encryption keys.
- **DVP-XL Encryption** – DVP-XL encryption features coded range equivalent to clear. The DVP-XL encryption features a Motorola proprietary algorithm. It contains 7.9×10^{28} encryption keys.
- **DVI-XL Encryption** – DVI-XL encryption features coded range equivalent to clear. The DVI-XL encryption features a Motorola proprietary algorithm. It contains 1.8×10^{19} encryption keys.

SECURENET SABER assures security of voice communication between networks, groups or individuals. It gives you the confidence that your message will only be heard by whom you intend. The variety of Motorola encryption options offered allows you to choose the type that best meets your needs.

Coded and Clear Operation - The flexibility to operate in both modes lets you use SECURENET radios in the same system as non-encrypted radios. The radio automatically selects the proper mode for incoming messages, either encrypted or clear.

This allows you to add SECURENET radios to your system without replacing existing radios.

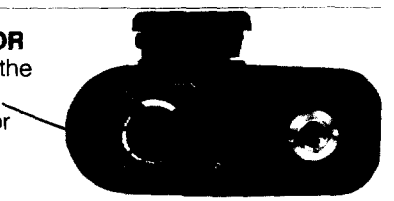
Clear Mode Alert Tones - These tones are a warning that the transmitting message is unprotected information.

This greatly reduces the possibility that confidential information can be transmitted on an unsecured channel.

Automatic Key Destruction with Power Loss - If someone attempts to tamper with a SECURENET radio and removes the secure voice module, the key which it contains will be destroyed. For additional protection the key can be destroyed by removing the battery while the radio is turned on.

These built-in features help to safeguard the security of your system.

CODED/CLEAR SELECTOR SWITCH: Selects whether the radio is sending coded (SECURENET encrypted) or clear (not encrypted) voice transmissions.



Annunciators - When transmitting or receiving in the coded mode (🔒) appears on the display of SABER II and III; when clear voice operation is in use (O) appears providing the operator with a positive indication of the radio's operating mode. On the SABER I the position of the Coded/Clear Selector Switch indicates whether the radio is sending coded (SECURENET encrypted) or clear (not encrypted) voice transmissions.

The user has visible indication of radio's transmitting status.

Options for SECURENET Capable SABER Models

Push-To-Talk Identification (PPT-ID) - The caller is identified instantly each time the radio transmit button is pushed. The caller's identification appears on the dispatcher's console.

The dispatcher will immediately know who is on the air, reducing the amount of voice communications on a channel. In addition, dispatchers will have more control over system discipline issues.

Emergency Alarm with Acknowledgment - This feature allows a user to notify a dispatcher of a crisis situation by simply pressing a button on the radio or flipping a hidden switch inside the user's vehicle. An alarm is immediately sent to the dispatcher with the Unit ID so that assistance can be provided. The alert and Unit ID will continue until the dispatcher acknowledges the emergency.

Emergency alerting capability can provide enhanced personnel safety.

Radio Check - This provides the dispatcher with the ability to check if a radio unit is on the air and within range without disturbing the radio operator. It also replaces routine "call-in" procedures.

This is a useful tool for dispatchers to use as a routine maintenance check, or if the dispatcher has reason to doubt the availability of a radio unit.

Call Alert - Acts as a paging system within your communications network. A Call Alert is sent with a series of audible signals and/or a flashing display (depending on the radio model) to notify an individual radio or an entire group of radios of an incoming call. And because Call Alert signals are acknowledged, dispatchers can verify targeted radios have received the signals.

This feature is especially useful in noisy environments or when the user is away from the radio.

Voice Selective Call - This feature gives radio users a level of privacy by allowing them to choose who hears the message.

This provides a convenient way to eliminate the need for

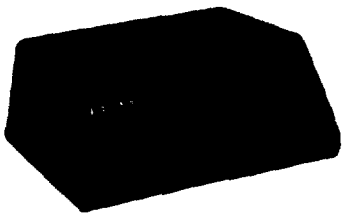
Remote Monitor - During emergency situations, the dispatcher can monitor voice conversation from the radio unit, thus gathering additional information about the activities surrounding the radio operator.

This increases the dispatcher's awareness of situations at the scene when the radio operator is unable to press the Push-To-Talk button. This feature also provides increased security to radio users, especially when used in conjunction with the Selective Radio Inhibit feature.

Repeater Access - SABER radios can selectively access up to eight different repeaters automatically. This provides selective repeater usage on the same channel. This is especially useful in conjunction with SECURENET operation, when PL/DPL cannot be used.

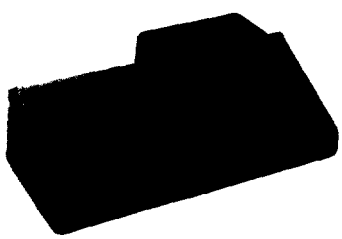
The ability to select one of multiple repeater channels helps to maximize wide area systems and allows for more efficient use of the system through frequency reuse. This makes the SABER portable radio that much more versatile.

SABER Accessories



Single Unit Charger - The SABER single unit charger is a microcomputer controlled rapid charge unit available in both 110 and 220 Volt configurations. Pictograph indicators provide visual feedback of the charger's operating status. To provide optimum control over the charging conditions, the Delta T method of charge state detection is used. The microcomputer monitors the battery's rate of charge and allows the charger to terminate rapid charge more efficiently and thus extend battery life.

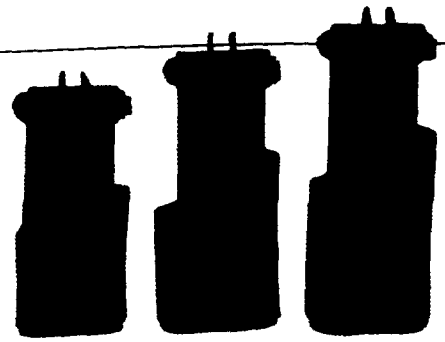
Provides quick and accurate charge for all SABER batteries—with radio and battery together or battery alone. To eliminate the possibility of charging a "faulty" battery and putting it into service, the user is visually alerted via the charger's display panel. The SABER charger's small size makes it ideal for desktop use.



Multi-Unit Charger - This microcomputer controlled rapid charger (including Delta T protection) has six charging pockets and is available in 110 and 220 Volt models. Three LED indicators provide user feedback on the current charge.

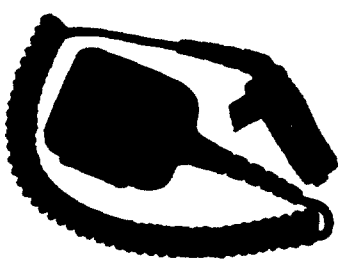
Ideal charger for multi-shift operation or centrally located equipment rooms where spare batteries are always required. The charger can be either wall or rack mounted or set neatly on a desktop.

"Porta-Pocket" AC/DC Battery Chargers - An AC plug-in transformer is available for home or office use and a permanent vehicular dashmount bracket is available to hold a belt clip radio while in the charging



Carry Accessories - SABER packaged models come standard with a removable belt clip attachment. Other carry accessories such as leather belt loop carry cases and leather swivel cases are available as options.

High quality leather cases ensure maximum protection for your SABER radio, yet permit audio to be heard clearly. The detachable belt clip provides the greatest degree of flexibility by allowing the user to choose between carrying options on a daily basis without changing the radio housing.



Remote Speaker Microphone** - This water resistant compact unit has a coiled cord, PTT switch and back cover clip that attaches easily to user's clothing.

Allows the user to talk and listen without removing the radio from the belt, case, or charger. Ideal for high noise level environments due to enhanced audio reception.

UHF Public Safety Microphone* - Features on this water-resistant microphone include a top mounted antenna, high-low audio switch, straight cord, and velcro backing to attach to a garment with a pinned velcro patch.

SABER I, II and III Portable Radio

Specifications pertain to Saber I, II and III except as indicated

Performance Specifications

General

	Standard Models		SECURENET Capable Models	
Model Series: SABER I	H99SA & (050H-053H)/H33, H43, SAN, SAG, YBN,YBG	H99SA & (054H-057H)/H34, H44, SAN, SAG, YBN, YBG	H99QX & (050H-053H)/H33, H43, QXN, YXN	H99QX & (054H-057H)/H34, H44, QXN, YXN
Model Series: SABER II	H99SA & (058H-059H)/H33, H43, SAJ	H99SA & (060H-061H)/H34, H44, SAJ	H99QX & (058H-059H)/H33, H43, QXJ	H99QX & (060H-061H)/H34, H44, QXJ
Model Series: SABER III	H99SA & (062H-063H)/H33, H43, SAK	H99SA & (064H-065H)/H34, H44, SAK	H99QX & (062H-063H)/H33, H43, QXK	H99QX & (064H-065H)/H34, H44, QXK
Frequency:	136-174 MHz	403-433 MHz, 440-512 MHz	136-174 MHz	403-433 MHz, 440-512 MHz
SABER I & II Power Supply:	One rechargeable nickel-cadmium battery or disposable lithium battery			
SABER III Power Supply:	One rechargeable nickel-cadmium battery or primary battery			
Dimensions (H x W x D):				
Less Battery:	3.87" x 2.64"/2.94" x 1.18" (98.29 mm x 67.05/74.67 mm x 29.97 mm)		4.42" x 2.64"/2.94" x 1.18" (112.26 mm x 67.05/74.67 mm x 29.97 mm)	
with Light Capacity:	6.13" x 2.64" x 1.18" (155.70 mm x 67.05 mm x 29.97 mm)		6.68" x 2.64" x 1.18" (169.66 mm x 67.05 mm x 29.97 mm)	
with Med. Capacity:	7.01" x 2.94" x 1.18" (178.05 mm x 74.67 mm x 29.97 mm)		7.56" x 2.94" x 1.18" (192.01 mm x 74.67 mm x 29.97 mm)	
with Ultra Light Capacity:	7.77" x 2.94" x 1.18" (197.35 mm x 74.67 mm x 29.97 mm)		8.32" x 2.94" x 1.18" (211.31 mm x 74.67 mm x 29.97 mm)	
with Disposable Lithium:	6.57" x 2.94" x 1.18" (166.87 mm x 74.67 mm x 29.97 mm)		7.12" x 2.94" x 1.18" (180.85 mm x 74.67 mm x 29.97 mm)	
SABER I & II—with Ultra High Capacity Ruggedized Option Only:	8.37" x 2.94" x 1.18" (212.6 mm x 74.67 mm x 29.97 mm)		8.37" x 2.94" x 1.18" (212.6 mm x 74.67 mm x 29.97 mm)	
Note:	(2.64" represents width at PTT/2.94" represents width at Top)		(2.64" represents width at PTT/2.94" represents width at Top)	

	Saber I & II	SABER III	SABER I & II	SABER III
Weight:				
Less Battery:	10.93 oz. (310 g)	11.31 oz. (321 g)	12.24 oz. (347 g)	12.57 oz. (357 g)
with Light Capacity:	17.06 oz. (484 g)	17.44 oz. (495 g)	18.38 oz. (521 g)	18.73 oz. (531 g)
with Med. Capacity:	22.68 oz. (643 g)	23.05 oz. (654 g)	23.99 oz.(680 g)	24.34 oz. 690 g)
with Ultra High Capacity:	24.75 oz. (702 g)	25.13 oz. (713 g)	26.07 oz. (733 g)	26.42 oz. (749 g)
with Ultra High Capacity Battery Ruggedized Option Only:[1]	29.64 oz. (840 g)		29.64 oz. (840 g)	
with Lithium Battery:	16.73 oz. (475 g)		18.04 oz. (512 g)	

[1]Ruggedized option only available with this battery

Transmitter

	VHF	UHF
RF Power: (@ 7.5V) H33 and H34 Models:	1/2.5 W	1/2 W

Receiver

	VHF	UHF
Channel Spacing:	30 kHz (25, 20 or 12.5 Int'l.)	25 kHz

SABER I, II and III Portable Radio (Continued)

Specifications pertain to Saber I, II and III except as indicated

Batteries for SABER Radio

Battery Capacity	Dimensions (H x W x D)
Light	2.26" x 2.64" x 1.18"

FCC Designations

	VHF	UHF
Standard Models:	AZ489FT3701-2.5W AZ489FT3702-6W	AZ489FT4702-2W AZ489FT4703-5W

MOTOROLA

MTS 2000 [redacted]

MTS 2000™ Portable Radio

Performance Specifications

General:

Power Supply	**Nickel-Cadmium Battery**	**FM APPROVAL INFORMATION (Optional):**
Battery Voltage: **Nominal:**	7.5 Volts	INTRINSICALLY SAFE: Class I, II, III, Division I, Groups D, F, G. Batteries NTN7146 (high capacity) and NTN7147 (ultra high capacity).
Range:	6 to 9 Volts	
Temperature Range: **Operating:**	−30°C to +60°C	NON-INCENDIVE: Class I, Division 2, Groups A, B, C, D. Batteries NTN7341, NTN7146, NTN7143, NTN7147 and NTN7144.
Storage:	−40°C to +85°C	

Physical Characteristics:	**HxWxD Dimensions*:** MTS I, II, III	**Model Weights:** MTS I	MTS II	MTS III	**Battery Part Numbers:**	**FM Battery Part Numbers:**
Less Battery:	6.30″ x 2.34″ x 1.49″ 16.0 cm x 5.9 cm x 3.8 cm	10.3 oz. 292 gm	10.9 oz. 309 gm	10.9 oz. 309 gm		
With Ultra-High Capacity Battery:	6.30″ x 2.34″ x 1.54″ 16.0 cm x 5.9 cm x 3.9 cm	19.5 oz. 555 gm	20.1 oz. 570 gm	20.1 oz. 570 gm	NTN7144 (Standard)	NTN7147 (Optional)

*Note: Dimensions reflect measurements taken at the widest points on the radio unit. They do not reflect every width and depth point on the radio.

Typical Performance Specifications (all specifications are per EIA 316B unless otherwise noted)

Specs listed are based on channel spacing of 30 kHz for VHF; 25 kHz for UHF/800 MHz; 12.5 kHz for 900 MHz. Noise cancellation better than 10 dB (or one-half the amount of background noise).

			Bandsplit:	**136 MHz Band 136-178 MHz**	**403 MHz Band 403-470 MHz**	**450 MHz Band 450-520 MHz**	**800 MHz Band 806-870 MHz**	**900 MHz Band** 896-941 MHz**
	Display	**Keypad**		**Model Numbers:**	**Model Numbers:**	**Model Numbers:**	**Model Numbers:**	**Model Numbers:**
MTS 2000 I	6-Character (Top)	No Keypad		H01KDD9PW1__N	H01RDD9PW1__N	H01SDD9PW1__N	H01UCD6PW1__N	H01WCD4PW1__N
MTS 2000 II	14-Character (Front)	3x2 Button		H01KDF9PW1__N	H01RDF9PW1__N	H01SDF9PW1__N	H01UCF6PW1__N	H01WCF4PW1__N
MTS 2000 III	14-Character (Front)	3x5 Button		H01KDH9PW1__N	H01RDH9PW1__N	H01SDH9PW1__N	H01UCH6PW1__N	H01WCH4PW1__N
FCC Designations:			**Standard:**	AZ489FT3768	AZ489FT4781	AZ489FT4780	AZ489FT5747	AZ489FT5748
			NPSPAC (±1.5PPM):	N/A	N/A	N/A	AZ489FT5749	N/A
Battery Life (5/5/90 Duty Cycle):				@ 5W @ 1W	@ 4W @ 1W	@ 4W @ 1W	@ 3W	@ 3W
Hours of Operation, Ultra-High Cap. Battery:				8.0 11.0	8.0 11.0	8.0 11.0	8.0	8.0

Transmitter:

Frequency Range:	136-178 MHz	403-470 MHz	450-520 MHz	806-825 MHz 851-870 MHz	896-902 MHz 935-941 MHz
Channel Spacing:	12.5/20/25/30 kHz	12.5/20/25 kHz	12.5/20/25 kHz	25 kHz	12.5 kHz
RF Power (@7.5V):	1 to 5 Watts (174-178 MHz - 4 Watts)	1 to 4 Watts	1 to 4 Watts (512-520 MHz - 3 Watts)	3 Watts	3 Watts
Frequency Stability: (−30°C to +60°C; +25° Ref.)	±0.0005%	±.00025%	±.00025%	±0.00025% ±0.00015% (NPSPAC)	±0.00015%
Emission: **.001 - 1.0 GHz** (Conducted & Radiated) **1.0 - 4.0 GHz**	−66dBW −60dBW	−66dBW −60dBW	−66dBW −60dBW	−48dBW −48dBW	−48dBW −48dBW
FM Hum & Noise: (Companion Receiver):	−45 dB	−45 dB	−45 dB	−40 dB	−45 dB (HearClear)
Modulation Limiting:	±2.5/4/5/5 kHz	±2.5/4/5 kHz	±2.5/4/5 kHz	5.0 kHz ±4.0 kHz (NPSPAC)	±2.5 kHz
Distortion:	3%	3%	3%	3%	3%
Audio Response: (6 dB/Octave Pre-emphasis from 300 to 3000 Hz)	+1, −3 dB	+1, −3 dB	+1, −3 dB	+1, −3 dB	+1, −3 dB

Receiver:

Frequency Range:	136-174 MHz	403-470 MHz	450-512 MHz	851-870 MHz	935-941 MHz
NPSPAC	N/A	N/A	N/A	866-869 MHz	N/A
Channel Spacing:	12.5/20/25/30 kHz	12.5/20/25 kHz	12.5 20/25 kHz	25 kHz	12.5 kHz
NPSPAC	N/A	N/A	N/A	12.5 kHz	N/A
Frequency Separation:	42 MHz	67 MHz	70 MHz	19 MHz	6 MHz
Sensitivity (12dB SINAD / −20 dB Quieting):	.28 µV / .40 µV	.28 µV / .40 µV	.28 µV / .40 µV	.28 µV / .41 µV	.28 µV / .41 µV
Intermodulation:	−75 dB	−73 dB	−73 dB	−72 dB	−62 dB
Adjacent Channel Selectivity:	−75 dB	−73 dB	−73 dB	−72 dB	−63 dB
Image Rejection:	−74 dB	−73 dB	−73 dB	−78 dB	−69 dB
Spurious Response Rejection:	−75 dB	−73 dB	−73 dB	−78 dB	−69 dB
Frequency Stability: (−30°C +60°C: 25°C Ref.)	+0.0003%	+.00025%	+.00025%	+0.00025% (821-824 MHz - ±0.00015%)	+0.00015%
Rated Audio:	500 mW	500 mW	500 mW	500 mW	500 mW
Audio Distortion (At Rated Audio):	3%	3%	3%	3%	3.5%

**SECURENET encryption not available on 900 MHz band.

Durability:

The MTS 2000 Series portables were designed for ruggedness:

	U.S. Military Spec 810C	**U.S. Military Spec 810D**	**U.S. Military Spec 810E**	**EIA Spec**
Standard	**Method (Procedure)**	**Method (Procedure)**	**Method (Procedure)**	**Method**
Low Pressure	500.1 (I)	500.2 (II)	500.3 (II)	N/A
High Temperature	501.1 (I, II)	501.2 (I Cat. A1, II)	501.3 (I Cat. A1, II)	RS5316B 204 C/D, 152C
Low Temperature	502.1 (I)	502.2 (I Cat. C1, II)	502.3 (I Cat. C1, II)	RS5316B 204 C/D, 152C
Temperature Shock	503.1 (I)	503.2 (I Cat. A1, C1)	503.3 (I Cat. A1, C1)	N/A
Solar Radiation	505.1 (I)	505.2 (I)	505.3 (I)	N/A
Rain	506.1 (I, II)	506.2 (I, II)	506.3 (I, II)	N/A
Humidity	507.1 (II)	507.2 (II, III)	507.3 (II, III)	RS5316B 204 C/D, 152C
Salt Fog	509.1 (I)	509.2 (I)	509.3 (I)	N/A
Dust	510.1 (I)	510.2 (I)	510.3 (I)	N/A
Vibration	514.2 (VII, VIII, X)	514.3 (I Cat. 8)	514.4 (I Cat. 8)	RS5316B 204 C/D, 152C
Shock	516.2 (I, II, V)	516.3 (I, IV, VI)	516.4 (I, IV, VI)	RS5316B 204 C/D, 162C

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Wherever Motorola sells, our product is backed by service. In the U.S., we have 900 authorized or company-owned centers. In addition, our products are serviced throughout the world by a wide network of company or authorized independent distributor service organizations.

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Telephone: (416) 499-1441

Specifications subject to change without notice.

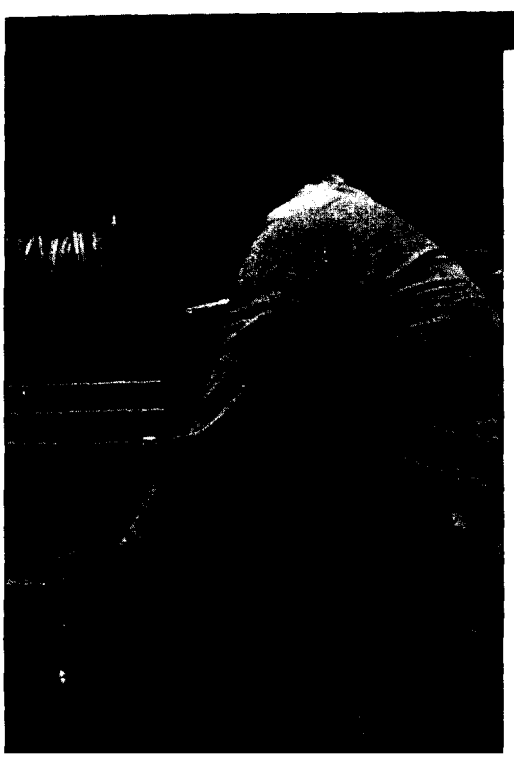
R3-4-153A

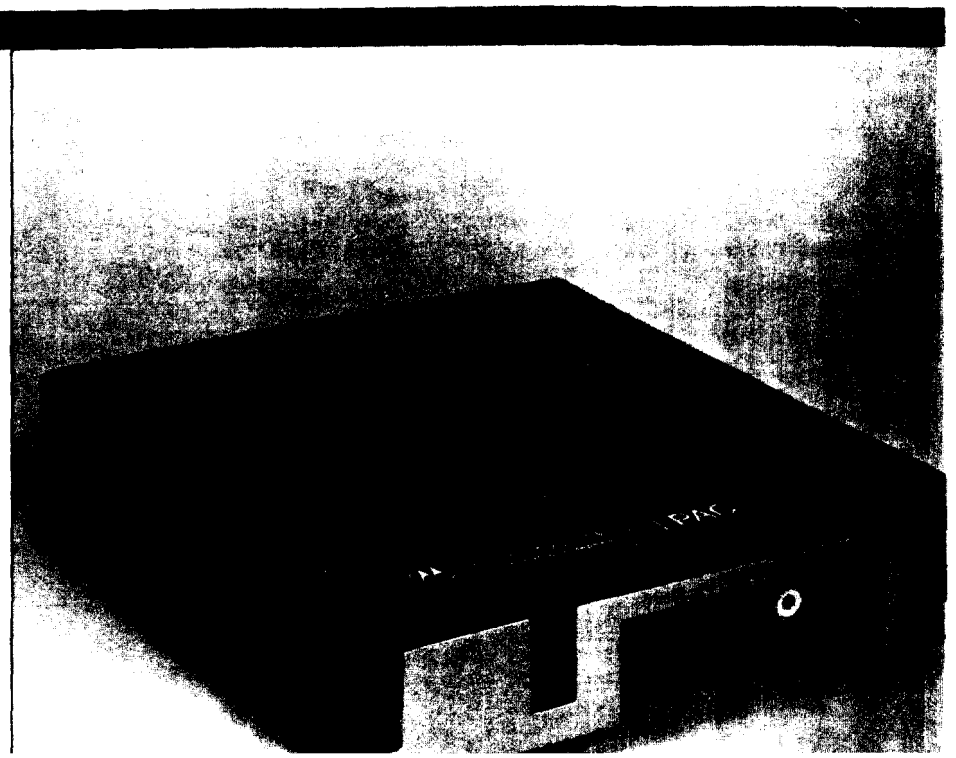
MOTOROLA

"PAC-TL" VEHICULAR REPEATER SYSTEM

For Conventional Portable/Trunked Mobile Single Vehicle Applications

150.7 1/4 MHz 450-470 MHz · 250 mW RF Power Output





"PAC•TL" Vehicular Repeater System

Motorola's PAC•TL Vehicular Repeater System is designed to expand the flexibility of your trunked mobile radio. Using a conventional UHF or VHF portable radio, you can step away from your car or truck and still maintain communications with members of your trunked fleet. The conventional portable radio serves as a wireless remote speaker/microphone for the trunked mobile. You can also communicate on-site with other portable radio units. Thus, you realize a double benefit: Access to your high-power, trunked mobile from hand-held radios (for example, the pager-sized EXPO portable radio), and portable-to-portable, on-site UHF or VHF communications. The result is a new dimension in trunking communications flexibility – extended communications coverage you can carry with you.

The PAC•TL system is designed for situations where only one PAC•TL equipped vehicle is expected on a scene or in a small area at one time. The system consists of a UHF or VHF PAC•TL Repeater, a UHF or VHF Portable Radio, a Control Unit/Charger or Switch Kit, an Interface Cable that mates the repeater to a new or existing trunked mobile radio, and an Antenna connected to the repeater.

The Motorola PAC•TL Vehicular Repeater System is unbeatable for timely and dependable communications in today's highly competitive business environment. The system offers the range of a mobile, the versatility of a portable, trunked and conventional communications, and the reliability you've come to expect from Motorola.

Features/ADVANTAGES

Trunked Coverage Available From Conventional Portables – With PAC•TL Repeater Systems, a conventional UHF or VHF portable radio serves as a wireless, remote speaker/microphone for the trunked mobile in the vehicle.

With a portable radio in hand, you can step out of your vehicle and remain in contact with your fleet. You retain access to the trunked system via the repeater when you are working near your vehicle or inside a building.

Extended Portable Range – With a low-power, conventional portable radio (EXPO, MT500, MX300, HT90/HT440/HT600 radio), you remain in contact with the trunked system via the high-power mobile in your vehicle.

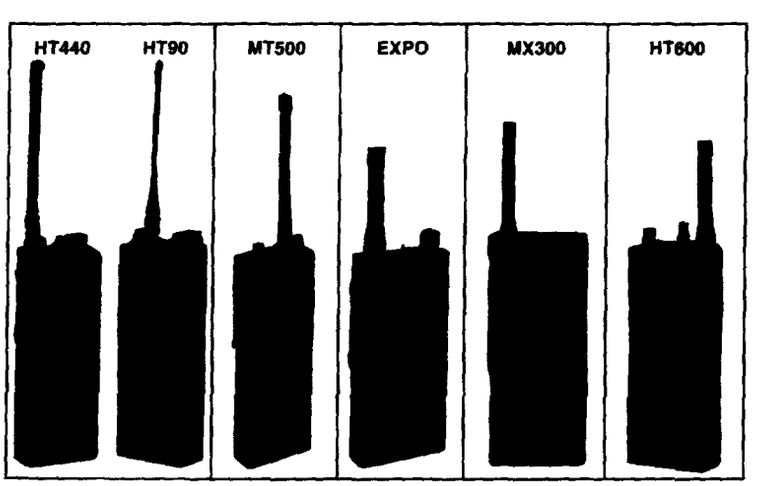
You enjoy wide area, trunked coverage from a small and easy-to-carry radio. The PAC•TL Repeater System resolves the range limitations of a portable radio.

Access of Up to 20 Trunked Channels – With the PAC•TL Repeater, you retain access to as many as 20 available channels in your trunked system.

With multiple channel availability, you can access the system faster.

Motorola's PAC•TL Repeater System is designed to expand the flexibility of current trunked mobile radio users. Using an HT90, HT440, EXPO, MT500 or MX300 Series portable radio, your operators can leave their vehicles and still maintain full communications with their base station, other mobile radios or other portable radios in their communications system.

Police officers, security guards, ambulance attendants, utility linemen and remote broadcasters are but a few of the many users who require out-of-the-vehicle communications to reduce the time in getting their jobs done quickly and safely. In fact, anyone who has the need to communicate away from their vehicle will find that the PAC•TL Repeater is the answer to their communications needs.



Accessories

Control Unit/Charger
The Control Unit/Charger provides automatic activation of the vehicular repeater when the portable radio is removed.

It provides in-vehicle battery charging when the portable is inserted. The Switch Kit provides manual activation of the repeater.

Switch Kit

Piggyback Mounting Bracket
A Piggyback Mounting Bracket is available as an accessory to provide space-saving utility through trunk-mounting the repeater and mobile radio in a stacked arrangement.

Features/ADVANTAGES

Trunked or Conventional Communications – Using your portable in the "talkaround" mode you can communicate with other portables on-site, while monitoring the trunked system.

You can have both trunking and conventional on-site communications with the flip of a switch. Because you can monitor the trunked system, you won't miss important messages.

Easy Add-On Capability – The PAC•TL Repeater can be used with the following trunked mobiles: • SYNTOR X Radio • SYNTOR X 2 Radio with the W308 Accessory Interface Option • SYNTOR X 9000 Trunked Radio • SMARTNET Dual Operation SYNTOR X Radio (VLJ Series) • PRIVACY PLUS Dual Operation SYNTOR X Radio (VKJ Series) • Dual Operation SYNTOR X Radio (VBJ Series) (NOTE: Either New or in-the-field models.)

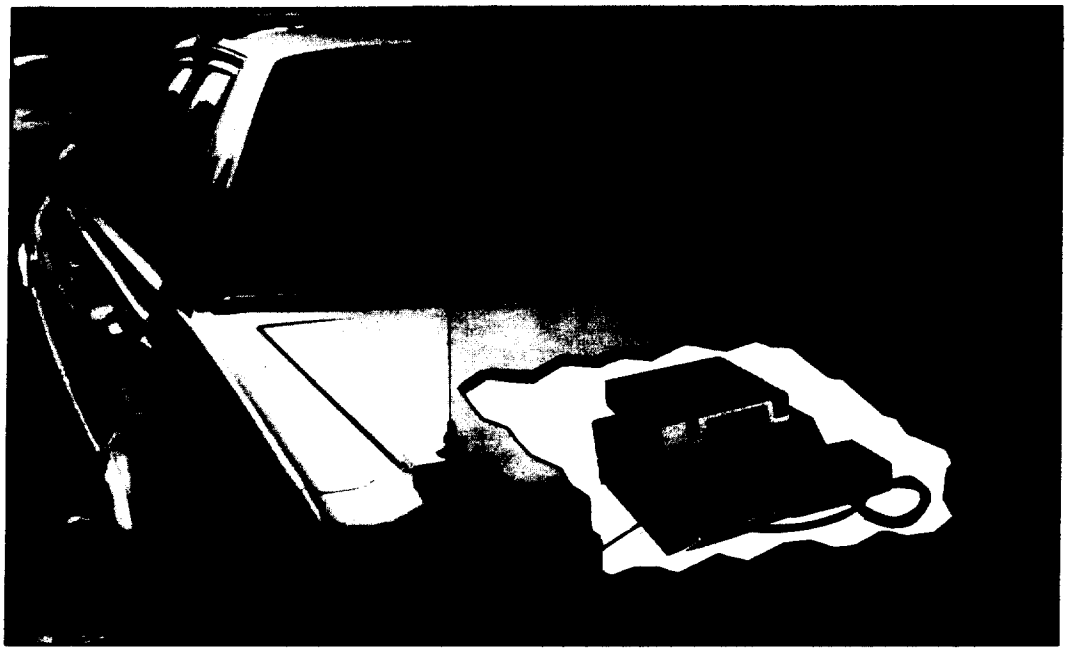
The PAC•TL Repeater System can be easily integrated into your mobile fleet. It is easily installed atop the trunked mobile. Add a conventional portable radio and you are ready for out-of-the-vehicle communications.

Simple Automatic Repeater Set-Up – Automatic activation of the repeater is accomplished by removing the portable radio from the control unit/charger. When the portable radio is returned to the control unit/charger, the repeater is automatically deactivated. (NOTE: A Control Unit/Charger is not available for the EXPO or HT600 Portable Radios.)

You do not have to remember to activate the repeater – it is done automatically. And, you can charge your portable radio in the vehicle so it is always ready for use.

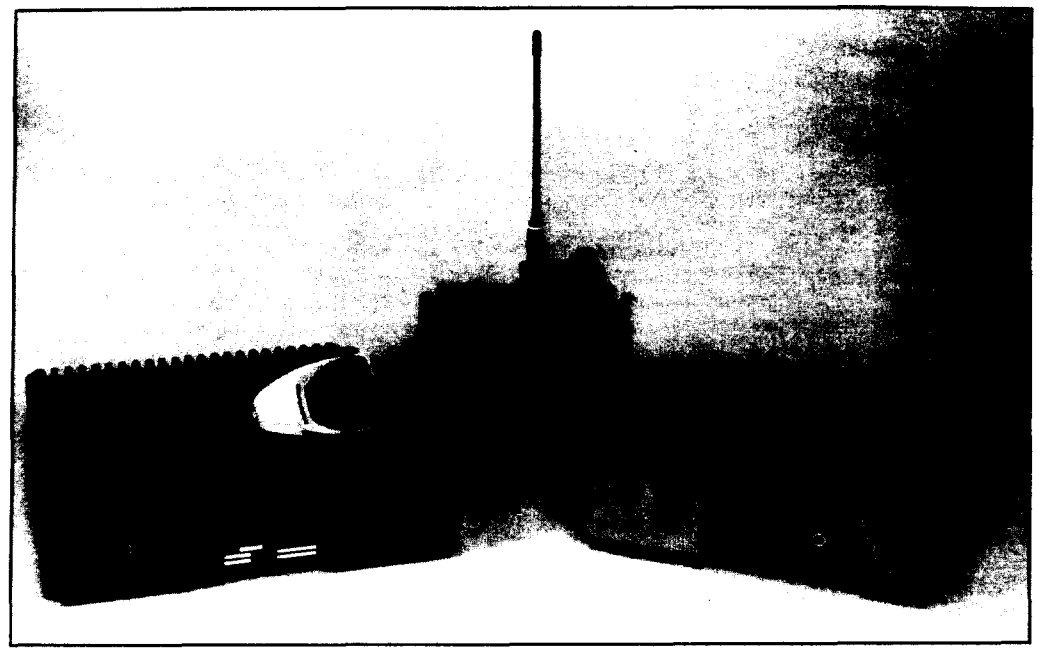
Simple Manual Repeater Set-Up – Manual activation of the repeater is accomplished with an under-dash Switch Kit used in place of the Control Unit/Charger. You simply turn on the PAC•TL repeater when leaving the vehicle, and disable it when you re-enter.

If you normally charge your portable radio overnight at home or in the office, the Switch Kit provides the repeater control function for you. A red lamp on the Switch Kit verifies activation of the repeater.



- 800 MHz Trunked Antenna, mounted on rooftop (not shown)
- Conventional Frequency PAC Antenna, shown mounted on lip of trunk
- Efficient, space-saving Piggy-back installation of PAC•TL Repeater with Mobile Radio Unit

Features/ADVANTAGES



- SYNTOR X Trunked Mobile Radio with Palm Microphone
- SYNTOR X Trunked Mobile Radio Control Head with HT90 Portable Radio
- PAC•TL Vehicular Repeater (Tray-mount with Key Lock)

Solid Construction – Motorola uses high quality, state-of-the-art, solid state circuitry in the PAC•TL Repeater System. All removable boards are plug-in. The housing is made of durable, high impact 16-gauge steel.

The solid state circuitry ensures reliability and extended product life. Plug-in circuit boards allow ease of repair. The housing is strong enough to stand up in a rugged environment.

Time-Out Timer – The time-out timer is a standard, built-in feature. It's adjustable from approximately 1.5 to 2.5 minutes.

The timer prevents prolonged system tie up if you accidentally key the portable for an extended period of time.

Tray-Mount with Key Lock – The PAC•TL Repeater fits in its tray-mount housing with a key lock.

This design secures your equipment and allows quick installation and removal for ease of service.

Piggyback Mounting Bracket – A bracket is available for installation of the PAC•TL Repeater. This accessory allows you to stack the PAC•TL Repeater on top of the mobile in the trunk of your vehicle.

This bracket simplifies the installation of the PAC•TL Repeater/Trunked Mobile and saves trunk space as well.

Balanced System Range – The communications range between the PAC•TL Repeater and the portable radio is equivalent by design. If the portable radio can reach the repeater, the repeater can reach the portable radio.

This decreases the chances of "missed" or "one-way" communications.

"PAC·TL" VEHICULAR REPEATER SYSTEM

Performance Specifications

General

Model:	P1462 UHF PL Model P1463 VHF PL Model
Dimensions:	2½"H x 10½"W x 12½"D (64 x 263 x 318mm)
Weight:	10 lbs. (4536g) less cables and charger
Attack Time: (Priority Unit)	500 msec. maximum
Temperature Range:	– 30°C to + 60°C. + 25°C reference
Power Input:	13.8V dc, to ±15%
Time-Out Timer:	Two minutes ±0.5 minute
Channel Capability:	C1R1 or C1R2 (Maximum Separation) 5 MHz UHF, 1 MHz VHF

VHF

TRANSMITTER

Frequency Range:	150.7-174 MHz
RF Power Output:	250 mW minimum
Modulation:	16F3
Frequency Stability:	±0.0005%
Current Drain:	375 mA
Audio Distortion:	5%
Audio Response:	+ 1, – 3 dB referenced to 6 dB/octave pre-emphasis
Conducted Spurious:	– 40 dB
Deviation:	Continuously adjustable to ±5 kHz
FCC Type Number:	CC3272

RECEIVER

Frequency Range:	150.7-174 MHz
Frequency Stability:	±0.0015%
Channel Spacing:	30 kHz
Current Drain:	225 mA
Sensitivity 20 dB Quieting: 12 dB SINAD:	0.75µV 0.50µV
Squelch Sensitivity:	1.0µV (adjustable)
Modulation Acceptance:	7 kHz
Intermodulation:	– 70 dB
Spurious Response and Image:	– 70/60 dB
Selectivity:	– 80 dB
Audio Distortion:	5%
Audio Level:	1.0V rms (nominal) into 100 Ohms
Audio Response:	+ 2, – 8 dB referenced to 6 dB/octave de-emphasis
FCC Type Number:	RC0112

UHF

Eq. Cat.	Sec.	Item
R3	1	157

MOTOROLA

Systems 9000 VRS
Vehicular Repeater System
136-174 MHz
450-470 MHz
250 mW RF Power Output

Features/Options ▪ Benefits

Motorola's Systems 9000 Vehicular Repeater System (VRS) is designed to expand the flexibility of Syntor X 9000 and 9000E mobile radio users. Using a portable radio with multiple PL capability, your operators can leave their vehicles and still maintain full communications with their base station, other mobile radios or other portable radios in their communications system.

This system truly puts "communications on the man" and thereby maintains contact without tying him to his vehicle. Police officers, security guards, ambulance attendants, utility linemen, remote broadcasters, and surveillance teams are but a few of the many users who require out-of-the-vehicle communications to reduce the time in getting their jobs done quickly and safely. In fact, anyone who has the need to communicate and their work takes them away from their vehicle, will find that the VRS repeater is the answer to their communications needs.

Easy Add-On Capability

• The VRS unit installs between the mobile radio and control head. Add a portable radio, a control unit/charger or a switch kit, and an antenna and you're ready for total out -of-the-vehicle communications.

Unique Cross-Band Operation

The VHF/VRS repeater system is designed to operate with a high-band portable and either a low-band, UHF, or 800 MHz mobile radio. For portable-to-base operation, the user transmits from the high-band portable to the VHF/VRS receiver. The repeater unit, in turn, automatically activates the mobile transmitter which retransmits the portable message to the base station. The reverse is true for base-to-portable operation.
The UHF/VRS repeater is designed to operate with a UHF portable and a low band, high band or 800 MHz mobile radio. For portable-to-base operation, the user transmits from the UHF portable to the UHF/VRS receiver. The VRS repeater automatically activates the mobile transmitter which retransmits the portable message to the base station. The reverse is true for base-to-portable operation.

• With these unique cross-band approaches, the problem of interference and the need for isolators or duplexers is eliminated.

Balance System Range

• The VRS repeater unit provides 250 mW of RF power output. Portable/VRS repeater provides a balanced range design that is fully reciprocal. Simply stated, if the portable can reach the repeater, the repeater will reach the portable.

Simplified Repeater Setup

Automatic activation of the repeater is accomplished by simply removing the portable radio from its special control unit/charger. Likewise, when the portable is returned to the control unit/charger, the repeater is automatically deactivated.

• The police officer, fire chief, etc., doesn't have to remember to throw a switch to activate the repeater – it's done automatically. When the operator takes the portable out of the control unit/charger, the VRS repeater is ready for operation. When the portable is returned, the repeater is shut down. Simple!

Manual activation is accomplished by one of two methods; a press of the VRS button on the control head (standard) or by activation of a remote switch (not provided). These two methods are mutually exclusive. The control head display provides positive verification that the VRS has been enabled.

• The VRS button provides the repeater control function for those users who normally charge their portable radio overnight at home or in the office.

Portable-To-Portable Operation

The VRS unit will also provide portable-to-portable operation without typing up the base station frequency.

• By disabling the "repeat" (Private-Line squelch) switch on the portable radio, the user can converse with other portables on the system without activating any repeaters – thus keeping the base station frequency clear for other communications.

Unique Logic Design

Unique solid-state logic circuitry eliminates the possibility of interference cause by several repeaters being activated at the same time. Other system designs use random access, leaving the possibility of interference up to chance. This means, as the number of repeaters in the same vicinity increases, the probability of two or more repeaters being activated at the same time increases.

• With Motorola's logic design, even if eight or more repeaters are being used in the same area at the same time, only one unit repeats communications. Virtually no chance exists for interference on the system, regardless of the number of units present in a one-half mile radius. Only one repeater will be activated. Thus, communications reliability is maximized and good system operation is ensured.

Portable Priority Interrupt

The priority interrupt feature, standard on Motorola's VRS units, overcomes the traditional repeater-access problems when the mobile channel is active. Without priority the operator can get locked out of the system until the channel is clear, even though it may only be "skip" or some other interference tying up the channel. (In the vehicle, the operator could ignore such interference, press the mobile microphone switch, and communicate without delay.)

• The priority interrupt feature gives the operator the same talk-back ability with the portable radio as in enjoyed with the mobile radio. This is accomplished by briefly interrupting the VRS transmitter at intervals to look for a signal coming back from the portable radio. The interruption is

Features/Options ▪ Benefits

minute so as not to lose any portion of the transmitted message. If a signal is sensed by the VRS repeater, it clears the system and allows the portable user to access the repeater.

Solid-State Construction

All Motorola VRS units use high quality, state-of-the-art, solid-state circuitry. All removable boards are plug-in, and feature captive screws.

• Solid-state circuitry ensures reliability and extended life. Captive screws prevent loss and ensure proper installation and operation. The high-impact housing is strong enough for the most rugged of environments.

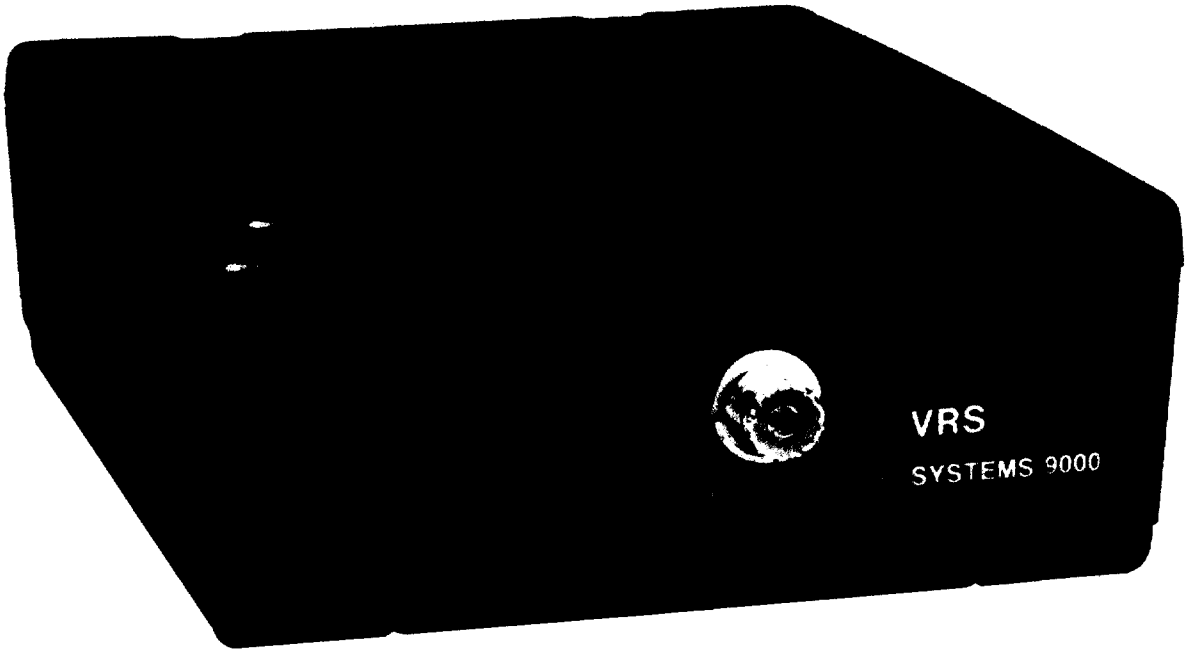
Time-Out Timer

A built-in time-out timer feature is standard and may be set to 15, 30, 60 or 120 seconds.

• The timer prevents prolonged system tie-up. Should the timer turn off the VRS repeater, the logic circuit automatically removes the repeater from the priority state, allowing another unit in the system to assume the repeat function.

Mobile Detector

The Mobile Detector feature is required when the mobile radio frequency scheme uses different transmit and receive frequencies (such as a two-frequency simplex system) and there are no base or fixed repeaters in the system. Through the use of the Mobile Detector feature, the VRS senses traffic on the mobile channel and ensures that multiple repeaters in the same area are not keyed. This feature is field programmable via the IBM programmer.



Systems 9000 Vehicular Repeater System

Performance Specifications

General

Model:	TO3KEA3006AASP01(VHF)	TO4KEA3006AWSP01(UHF)
	TO3KEA3006AWSP01(VHF)	TO4KEA3006AWSP01(UHF)
Dimensions:	7.28"W x 9.75"L x 3"H (185 x 248 x76.2 mm) (11.28"L (287mm) with siren)	
Weight:	3.5 lbs. (1.74Kg) without siren 6.5 lbs. (3.23Kg) with siren	
Attack Time: (Priority Unit)	300 msec. maximum	
Temperature Range:	-30°C to +60°C, +25°C reference	
Power Input:	13.8V dc, to ±20%, Negative Ground	
Singletone Encoder/Decoder:	Microprocessor Controlled Nominal 847.5 Hz Programmable 800-1400	
Time-Out Timer:	Programmable (15, 30, 60 or 120 seconds)	
Channel Capability:	1, T1=R1	

VHF

TRANSMITTER

Frequency Range:	136-174 MHz
RF Power Output:	250 mW minimum
Modulation:	15F2, 15F3
Frequency Stability:	±0.001% standard
Current Drain:	950 mA
Audio Distortion:	Less than 5% @ 1000 Hz, 60% Max.
Audio Response:	+1, -3 dB referenced to 6 dB/octave pre-emphasis
Conducted Spurious:	-50 dB
Deviation:	Continuously adjustable to ±5 kHz

RECEIVER

Frequency Range:	136-174 MHz
Frequency Stability:	±0.001%
Channel Spacing:	30 kHz
Current Drain:	135 mA
Sensitivity –	
20 dB Quieting:	1.18 uV
12 dB SINAD:	0.80 uV
Squelch Sensitivity:	.75 uV (adjustable)
Modulation Acceptance:	5 kHz
Intermodulation:	-65 dB
Spurious Response and Image:	-65 dB
Selectivity:	-80 dB
PL Decoder:	IC type:67-250.3 Hz
Audio Distortion:	5%
Audio Level:	1.0V rms (nominal) into 100 Ohms
Audio Response:	+2, -8 dB referenced to 6 dB/octave de-emphasis

FCC Type ABZ89FT3720

UHF

TRANSMITTER

Frequency Range:	450-470 MHz
RF Power Output:	250 mW minimum
Modulation:	16F3
Frequency Stability:	±0.0005% standard
Current Drain:	600 mA
Audio Distortion:	5%
Audio Response:	+1, -3 dB referenced to 6 dB/octave pre-emphasis
Conducted Spurious:	-46 dB
Deviation:	Continuously adjustable to ±5 kHz

RECEIVER

Frequency Range:	450-470 MHz
Frequency Stability:	±.001%
Channel Spacing:	25 kHz
Current Drain:	135 mA
Sensitivity –	
20 dB Quieting:	1.5 uV
12 dB SINAD:	1.18 uV
Squelch Sensitivity:	.75 uV (adjustable)
Modulation Acceptance:	5 kHz
Intermodulation:	-65 dB
Spurious Response and Image:	-55 dB
Selectivity:	-70 dB
PL Decoder:	IC Type: 67-250.3 Hz
Audio Distortion:	5%
Audio Level:	1.0V rms (nominal) into 100 Ohms
Audio Response:	+2, -8 dB referenced to 6 dB/octave de-emphasis

FCC Type ABZ89FT4743

Support Services

Wherever Motorola sells, our product is backed by service. In the U.S., we have 900 authorized or company-owned centers. In addition, our products are serviced throughout the world by a wide network of company or authorized independent distributor service organizations.

Winner 1988 Malcolm Baldrige National Quality Award

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Specifications subject to change without notice.